

REMARKS

Reconsideration of this application is respectfully requested in view of the foregoing amendment and the following remarks.

Claims 1-13 and 19-32 were pending in this application. In this Amendment, Applicant has amended claim 1. Accordingly, claims 1-13 and 19-32 will still be pending herein upon entry of this Amendment.

In the Office Action mailed April 15, 2005, the Examiner rejected claims 1-13 and 19-32 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,221,410 to Kushner et al. ("Kushner"). To the extent this rejection might still be applied to claims presently pending in this application, Applicant respectfully traverses the rejection.

In rejecting claims 1-13 and 19-32 as obvious in view of Kushner, the Examiner correctly notes that Kushner does not teach a film having a hydrophobic mask and a precipitant solution. The Examiner goes on, though, to assert that because of the absence of unobvious results, it would be obvious to modify the Kushner apparatus to ensure proper orientation. Applicant respectfully submits, however, that such unobvious results do exist, and that the specification of the present application clearly spells out the unobvious and beneficial results of a flexible film that receives a deposited precipitant solution and seals a crystallization site. Indeed, the prior art of record contains no teaching or suggestion of the use of a film that holds or receives a precipitant solution inside a crystallization site.

Kushner is directed to a crystal forming device having a base plate with a plurality of wells and a single removable cover resting over the base plate and covering all of the wells.

(Column 5, lines 55-66.) Both the base plate and cover are made from a sturdy plastic material, such as polystyrene. (Column 7, lines 21-33 and 63-64.) The sturdy plastic cover is therefore substantially rigid. Although the rigid cover can seal the wells by resting directly on upper edges of the wells of the base plate, the rigid cover preferably uses circular beads 44 and silicon or other grease seal 46 to ensure a gaseous seal. (Column 8, lines 9-21.) A macromolecular solution is deposited on the rigid cover, which is then inverted and placed over the well. (Column 8, lines 30-34.)

In stark contrast to the Kushner's rigid cover, the present invention uses a film that provides unobvious and beneficial results over the Kushner apparatus in terms of the quality of the seal on a site, the ease of use of the apparatus, and the volume of precipitant samples required for crystallization. As described in the present application at, for example, paragraph [0036], the film provides "give" to ensure a better seal, and to obviate the need for a separate sealant such as grease. Kushner's rigid cover lacks this "give" and compensates by using circular beads 44 and a silicon or other grease seal 46. In addition, as described at, for example, paragraph [0063], the thin film of the present invention also optimizes detection system sensitivity. And, most importantly, as described at, for example, paragraph [0065], the film of the present invention enables the use of small volume samples in automatic or robotic multi-channel pipetting systems. In particular, because of the flexibility of the film, automatic dispensing pipette tips can be pushed into the surface of the film to ensure touch off at each crystallization site. In this manner, the film enables the present invention to operate with smaller volumes of protein or other precipitant, which can significantly reduce the cost of growing crystals.

In failing to teach or suggest the present invention's film, prior art crystallization devices such as Kushner's provide hard surfaces (e.g., polystyrene) onto which to dispense samples. As explained in paragraph [0065] of the present application, these hard surfaces are significantly less forgiving than the present invention's film, and are considerably more difficult to work with, especially when using generic pipette tips, which can vary in length and straightness. These prior art devices therefore create undesirable inconsistencies in pipetting or breakdown of automatic equipment. In addition, although the background section of Kushner describes an automated crystallization system developed by Cryschem Corporation that uses mylar film to seal a site, the mylar film does not hold or receive precipitant solution and instead is used in conjunction with a specially designed plate that has wells with center posts for standing drops. (Column 4, lines 4-19.) The Cryschem system therefore actually teaches away from the present invention by disclosing that precipitant solution is deposited on the plate and not on the film.

To emphasize the distinction provided by the present invention's film, Applicant has amended claim 1 to recite that the film is adapted to hold a precipitant solution. The film is adapted to hold the solution by, for example, patterned hydrophobic coatings or semi-hydrophobic coatings (*see, e.g.*, specification paragraphs [0028] and [0039]). Neither Kushner nor the Cryschem system discloses a film adapted to hold precipitant solution. Likewise, original independent claims 19 and 23 recite a film adapted to receive a precipitant solution. In light of this distinction, Applicant respectfully submits that amended independent claim 1 and original independent claims 19 and 23 are patentable over the prior art of record. Applicant

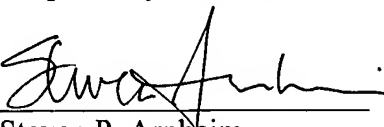
further respectfully submits that dependent claims 2-18, 20-22, and 24-32 are also patentable due at least to their dependence on an allowable base claim.

Beyond the present invention's unique use of film, the pending claims also recite further features that are neither taught nor suggested by the prior art of record, relating to a two-film crystal forming apparatus. Claims 7-13 and 23-32 recite crystal forming apparatus comprising two films and a support structure for each film. Embodiments of these apparatus are shown in Figures 5A-6 and described in the specification at, for example, paragraphs [0046]-[0055] and [0060]. These support structures can comprise lattices having multiple through holes and passageways, as is recited in claims 9-12 and 26-29. Kushner plainly lacks any teaching or suggestion of these specific structures. For this additional reason, Applicant respectfully submits that claims 7-13 and 23-32 are patentable over the prior art of record.

In view of the foregoing, all of the claims in this case are believed to be in condition for allowance. Should the Examiner have any questions or determine that any further action is desirable to place this application in even better condition for issue, the Examiner is encouraged to telephone Applicant's undersigned representative at the number listed below.

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